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# Modern Philology

VOLUME XVIII

August 1920

NUMBER 4

## A NINTH-CENTURY ASTRONOMICAL TREATISE

In the *Proceedings of the Royal Irish Academy* for 1907 (Vol. XXVI, Section C, pp. 381-445) there was printed for the first time a Latin computistical treatise compiled by a ninth-century Irish continental teacher named Dicuil.<sup>1</sup> The sole surviving MS of Dicuil's treatise is now preserved in the Bibliothèque Municipale of Valenciennes, where it is classed N. 4. 43 (No. 386 in the *Catalogue* of Mangeart,<sup>2</sup> and 404 in that of Molinier).<sup>3</sup> Previously it had belonged to the monastery of Elnon at Saint-Amand, to which it appears to have been given by Hucbaldus (840-930), who may also have been its scribe.<sup>4</sup> It was brought to Valenciennes during the period of the French Revolution. It is a parchment quarto of 118 leaves measuring 21.9 by 14.8 cms., written in long lines with 26 to the page. Titles are in capitals sometimes of violet color. Initials are in red or lilac. The volume is bound in wood covered with vellum. The writing is in excellent Caroline minuscules of the latter part of the ninth century—possibly the work of Hucbaldus,<sup>5</sup>

<sup>1</sup> For an account of Dicuil and his writings cf. Esposito, *Studies*, III (1914), pp. 651-76.

<sup>2</sup> *Catalogue des Manuscrits de la Bibliothèque de Valenciennes*, Paris, 1860, pp. 375-77.

<sup>3</sup> *Catal. gén. des MSS des Bibl. Publ. de France, Départements*, T. XXV (1894), pp. 365-66.

<sup>4</sup> This we learn from the twelfth-century catalogue of the Saint-Amand library published by Delisle, *Le Cabinet des MSS de la Bibl. Nationale*, T. II (1874), p. 451, No. 93.

<sup>5</sup> For whom see Manitius, *Gesch. d. lat. Lit. des Mittelalters*, I (1911), p. 590.

as mentioned above. When at Saint-Amand, the MS was numbered N. 270. In the inventory printed by Sanderus<sup>1</sup> it is N. 247. The contents of the volume are:

Ff. 1a-26b: Isidori *Etymologiarum Liber ii.*<sup>2</sup>

Ff. 27a-56b: *Disputatio de Rethorica et de Virtutibus sapientissimi Regis Karoli et Albini Magistri.*<sup>3</sup>

F. 57a: *Sententiae Septem Sapientium.* See Mullach, *Fragmenta Philosophorum Graecorum*, I (1860), p. 235.

Ff. 57a-60a: A series of diagrams illustrating the divisions and subdivisions of philosophy, commencing at the bottom of f. 57a.

Ff. 60b-62a: *Origenis Prologus in Canticum Canticorum.* See Migne, *Patrol. Graeca*, XIII, cols. 61 sqq.

Ff. 62b-65a: *Dicta Sybillae Magae. Non multi, non vel pauci . . . nullus postea insanam me dicet, sed dei magam.* Then follow about 135 verses, *Mundus origo mea est, animam de sidere traxi. . . . Vita brevis hominis finita solvitur annis.*<sup>4</sup>

F. 65b: Twenty-seven hexameters, *Iudicii signum tellus sudore madescet . . . Precedet e celo ignisque et sulfuris amnis.* For this famous poem see Haupt, *Opuscula*, I (1875), p. 289; Sackur, *Sibyllinische Texte*, p. 187; *Oracula Sibyllina bearb. von J. Geffcken*, Leipzig, 1902, pp. 154-55. This copy has not been collated.

Ff. 66a-118a: Dicuil's *Computus*, without either title or scribal *explicit*.

F. 118b: blank.

The scribe has evidently taken great pains in transcribing Dicuil's *Computus*, for he has made many corrections in his own work. As Manitius<sup>5</sup> remarks, he appears to have taken to heart Dicuil's line (p. 413, l. 6), *Rustica ne scribant has membra caveto loquelas*. Other corrections are due to later hands. Palaeographically the script presents all the characteristics of late ninth-century Caroline minuscule.<sup>6</sup> The combination *ae* is frequently so written, but we also find *e* and simply *e*. In the matter of spelling we find the usual peculiarities and inconsistencies, e.g., *ymnus*, *rythmus* and *rithmus*, *ciclus*, *dyptongus*, *dactilus*, *pirgis*, *inicio*, *nunciabo*, *renunciabo*,

<sup>1</sup> *Bibliotheca Belgica Manuscripta*, Insulis, 1641, Pars I, pp. 54-55.

<sup>2</sup> This copy is not mentioned in Lindsay's recent edition (Oxford, 1911).

<sup>3</sup> For this work see Manitius, *op. cit.*, pp. 282-83, who does not mention this copy.

<sup>4</sup> There is a copy of this tract in the Bodleian MS Auct. T. 2. 23, ff., 88b-93a, of saec. X.

<sup>5</sup> *Op. cit.*, p. 650.

<sup>6</sup> The facsimile given in the Academy's edition (Plate XXII) represents f. 67a (not 67b as stated).

but *nuntiatas*, *nuntiatio*, etc., *endecas*, *scemata*, *disticon*, *scola*, *audatia*, *suptilis*, *linia* and *linea*, *zoziasco*, *distingitur*, *pasca* and *pascha*, *pascalis* and *paschalis*, *decennovennalis* and *decennovenalis*, *compotus*, *spaciosae*, *repperitur* and *reperitur*, *anastasseos*, *adfirmatur*, *reuma*, *adsissa*.

Dicuil's *Computus* was long attributed to Alcuin,<sup>1</sup> a mistake which arose from the note of contents in a twelfth-century hand on f. 1a of the MS, *Item rethorica Albini ad Karolum et computus eiusdem ad eundem*. The true authorship was first pointed out in 1855 by Bethmann.<sup>2</sup> A transcript of the tract was made by J. Heller<sup>3</sup> in 1875, from which Dümmler<sup>4</sup> printed some of the verses, including the two *Ymni per rythmum facti* (I, 9, and II, 7, ed. pp. 397, 405). The structure of these verses was investigated by Ebert,<sup>5</sup> and by Wilhelm Meyer.<sup>6</sup> The latter printed the third *Ymnus* (II, 14, ed. p. 414), and pointed out that Dicuil is an early example of a writer who uses hexameters with end-rhymes. Subsequent to the publication of the Academy's edition in 1907, a summary analysis of the work was given by Dr. Max Manitius.<sup>7</sup>

The *Computus* is divided into four books (*Libelli*), and is written partly in prose and partly in verse. As a scientific exposition its value is small. The arrangement is chaotic and the chapters follow one another in the most arbitrary manner imaginable. The treatment of the subject is anything but clear and the work is in fact a clumsy complication extracted from previous writers. Dicuil wrote, as we shall presently see, in France in the years 814-16, at a period when, thanks to the Carolingian revival of learning, astronomical (or rather computistical) studies were being cultivated with extraordinary interest at the Frankish court. To the early works of

<sup>1</sup> E.g., by Sanderus (*loc. cit.*), by the authors of the *Histoire littéraire de la France*, VI (1742), pp. ix-x, and by Mangeart (*loc. cit.*), who printed the five opening hexameters. Sanderus had given the index of chapters.

<sup>2</sup> *Archiv der Gesellschaft für ältere deutsche Geschichtskunde*, XI (1855), p. 521.

<sup>3</sup> *Neues Archiv der Gesellschaft*, etc., II (1877), p. 305.

<sup>4</sup> *Ibid.*, IV (1879), pp. 256-58, and *Mon. Germ. Hist., Poetae*, II (1884), p. 668.

<sup>5</sup> *Allgemeine Gesch. der Lit. des Mittelalters*, II (1880), pp. 392-93.

<sup>6</sup> *Sitzungsberichte der Philos.-Philol. Classe der Münchener Akademie*, I (1882), pp. 68 n., 91, 94, 97, and *Gesammelte Abhl. zur mittellateinischen Rythmik*, I (1905), pp. 193, 194, 195, 216, 220, 222.

<sup>7</sup> *Gesch. d. lat. Lit.*, etc., I (1911), pp. 649-51; see a note by Hellmann, *Neues Archiv*, XXXVI (1911), p. 623.

Victorius of Aquitaine (*Cursus Paschalis*, ed. Mommsen, *Chronica Minora*, I [1892], pp. 669 *sqq.*), of Dionysius Exiguus<sup>1</sup> (ap. Migne, *Patrologia Latina*, LXVII, cols. 19–28 and 483–520), of Isidore of Seville (*Etymologiarum* vi. 17), to the series of tracts edited by Bruno Krusch (*Studien zur christlich-mittelalterlichen Chronologie*, Leipzig, 1880), and to the later works of Beda (*De Ratione Computi; De Temporum Ratione; De Temporibus*; ap. Migne, *Patrol. Lat.*, XC), and the so-called “Munich Computus”<sup>2</sup> of 718, were now added the great astronomico-computistical compilation of the latter part of the eighth century<sup>3</sup> and the tracts derived from it, such as the *De Cursu et Saltu Lunae ac Bissexto* of Alcuin<sup>4</sup> (Migne, *Patrol. Lat.*, CI, 981–1002), the anonymous *Liber de Computo* drawn up in 810, published by Muratori,<sup>5</sup> and reprinted by Migne (*PL*, CXXIX, 1275–1372), and the extensive compilations of about 809 and 811–12, of which numerous MSS are in existence.<sup>6</sup> It was from these works that writers such as Dungal (811)<sup>7</sup> and Dicuil (814–16), employed at the Carolingian court, were able to derive their tracts. It is noteworthy that the discussion in verse at the commencement of Book II of Dicuil’s work (ed. pp. 398–400), on the distances between heaven and earth and between the seven planets according to the estimate of Pythagoras and the ancient pagan sages is taken directly from the *Historia Naturalis* of Pliny (ii, 21, 83; 22, 84; 23, 85, ed. Sillig, 1851), a book from which Dicuil made very large extracts in his later tract *De Mensura Orbis Terrae*.<sup>8</sup> The vague references to

<sup>1</sup> Dicuil mentions this writer by name (ed. p. 424, l. 12), though he has probably taken the reference from later compilations.

<sup>2</sup> See on this still unprinted work MacCarthy, *Annals of Ulster*, IV (1901), pp. lxvii–lxxiv.

<sup>3</sup> A thorough investigation of this work is much to be desired; cf. K. Rück, *Auszüge aus der Naturgeschichte des Plinius in einem astronomisch-komputistischen Sammelwerke des achten Jahrhunderts*, München, 1888; Manitius, *Gesch.*, I, pp. 286, 373, 447.

<sup>4</sup> *Ibid.*, I, pp. 285–87.

<sup>5</sup> *Anecdota ex Ambros. Bibl. Codicibus*, III, Patavii, 1713, pp. 114–203; cf. Gabriel Meier, *Die sieben freien Künste im Mittelalter*, II (1887), pp. 6–7 (*Programm des Stiftes Einsiedeln, Studienjahr 1886–87*).

<sup>6</sup> E.g., four at Paris (cf. Delisle, *Cat. des MSS des fonds Libri et Barrois*, 1888, pp. 63–68, 72–76, 76–78, 81–84), one at Madrid, Biblioteca Nacional, L. 95, of tenth century, and Monte Cassino 3 (cf. *Bibl. Casinensis*, I (1873), pp. 84 *sqq.*, and *ibid.*, *Florilegium*, pp. 57–96); Manitius, *op. cit.*, pp. 286, 373, 447. Further investigation of these MSS is much to be desired.

<sup>7</sup> Manitius, *op. cit.*, pp. 373–74.

<sup>8</sup> See on this point Esposito, *Studies*, III (1914), p. 665.

“Pagani” or “Philosophi” (ed. pp. 415, 441, 444) are taken from Isidore of Seville (*Etymol.* iii. 31–70; V, 30, 5–8, etc.).<sup>1</sup>

As a teacher of grammar Dicuil took a great interest in metrical subjects, and one of the special attractions by which he sought to please King Louis the Pious, to whom he dedicated his work, was the introduction of two chapters (i. 8, and ii. 13, pp. 392 and 408) entitled *De ludificis versibus*, in the first of which four hexameters are so constructed that the four verse-endings being retained they may be transformed into 72 hexameters which yield a quasi-meaning, and in the second the permutation is carried to produce 166 verses. Dicuil’s model here is the poet Optatianus Porphyrius (c. 350 A.D.),<sup>2</sup> whose ingenious constructions were very popular and often imitated in the Caroline and pre-Caroline epochs.<sup>3</sup> This poet’s *Carmen* 25<sup>4</sup> (*recens.* L. Müller, Lipsiae, 1877, pp. 26–28) is closely followed by Dicuil both for the construction of the four verses and for the method of permuting them.<sup>5</sup>

Reference has already been made to the three *Ymni per rythmum facti*. Other evidences of grammatical interest are the mention of Donatus (ed. p. 395, l. 36), and the lines at the end of the work (p. 445, ll. 11–27), the last of which is a quotation from Vergil (*Aeneid* i. 374). At p. 444, ll. 13–20, he points out the difficulty of being always clear in the treatment of technical subjects in verse, and states that he had for that reason dealt with some questions both metrically and in prose.

A few references to the Bible<sup>6</sup> may be noted.

The following information concerning Dicuil’s personal history may be obtained from the *Computus*:

<sup>1</sup> There is as yet no comprehensive treatment of the history of astronomy in the early Middle Ages; cf. Sickel, *Wiener Sitzungsberichte, Ph.-Hist. Classe, XXXVIII* (1862), pp. 153–201; Meier, *Sieben freien Künste*, II (1887), pp. 3–15, 22–36; Cantor, *Vorlesungen über Gesch. der Mathematik*, I, 2<sup>e</sup> Aufl. (1894), pp. 495, 532, 780 sqq.; MacCarthy, *Annals of Ulster*, IV, pp. xiv–clxxxii.

<sup>2</sup> Cf. Teuffel, *Gesch. d. röm. Lit.*, 6<sup>e</sup> Aufl., III (1913), pp. 216–17.

<sup>3</sup> Manitius, *Gesch.*, I, p. 754. Beda *De arte metrica*, cap. xxiv (*PL*, XC, 173), speaks of the *insigne volumen Porphyrii Poetae*.

<sup>4</sup> In the older editions (*PL*, XIX, 431) it is numbered 26.

<sup>5</sup> On p. 394, l. 5, remove stop after *solis*; p. 411, l. 5, correct *verbis* to *ciclos*; p. 411, l. 41, is clearly wrong; p. 412, l. 3, correct *verbis* to *ciclos*; p. 413, l. 4, correct *ciclo* s to *verbis*.

<sup>6</sup> E.g., p. 389, l. 33, cf. III Reg. 17:11; p. 390, ll. 20–21, cf. Luc. 21:2–3; p. 432, l. 32, cf. Luc. 23:54–56; p. 432, l. 40, cf. Luc. 1:26.

Dicuil was the author (ed. pp. 390, l. 13, 395, l. 21); he was an Irishman (p. 388, l. 23); he was living in France, possibly in the capacity of a teacher of grammar at the court school (p. 444, l. 23), and compiled his treatise as a series of yearly gifts to Charlemagne's successor, Louis the Pious (pp. 382, l. 28, 389, l. 32, 390, l. 12, 395, l. 20, 396, l. 39, 404, l. 30, 408, l. 28, 413, l. 5, 414, l. 22, 439, l. 17); the first book was commenced in April 814 (p. 383, l. 7), and the fourth chapter was written on the 18th day of that month (p. 386, l. 20); Dicuil intended to present this book to Louis on the occasion of the Frankish festival on May 14 when the nobles would be making their annual presents<sup>1</sup> to the king (ed. p. 390, l. 17), but Louis does not appear to have been pleased with the Irishman's labors, for the latter complains (p. 395, l. 39) that though he was present while Dicuil was reciting his verses he would not listen nor offer any reward; the second book was composed in 815 (ed. pp. 402, l. 9, 414, l. 25), and Dicuil states that should anything in it appear obscure to the king he will explain it when they meet (p. 414, l. 21); the date of the third book is not given, but the fourth was completed in 816 (p. 444, l. 39), when, as he tells us (p. 440, l. 37), he was living far away from the sea. At p. 444, l. 12, he notes the unsatisfactory nature of his source (Isidore of Seville) and states that if anybody else would furnish a better account of the subject under discussion he would willingly adopt it.

Dicuil's *Computus* appears to have remained totally unknown down to modern times. Later ninth-century writers on the same subject, e.g., Hrabanus Maurus of Fulda whose *De Computo*<sup>2</sup> was written in 820, and Helpericus of Auxerre, whose work with the same title<sup>3</sup> dates from about 850, had no knowledge of Dicuil. Indeed the fact that we possess only one MS of his work shows that it was a complete failure and was but rarely copied.

The printed text of the *Computus* shows many signs of ignorance, misreading of the MS, and inexperience on the part of the editor.

<sup>1</sup> On this custom cf. Waitz, *Deutsche Verfassungsgeschichte*, IV, 2<sup>e</sup> Aufl. (1885), pp. 107-11, and *Hibernici Exulis Carmen* ii, v. 8 ap. Dümmler, *Poetae*, I (1881), p. 396.

<sup>2</sup> Ed. Baluze, *Miscellanea*, cura Mansi, II, Lucae, 1761, pp. 62-84; Migne, *PL*, CVII, 669-728.

<sup>3</sup> Migne, *PL*, CXXXVII, 17-48. Both Hrabanus and Helpericus are superior to Dicuil in clearness of exposition and orderly arrangement. Their tracts were widely read.

These deficiencies may perhaps be condoned when it is remembered that at the date of publication (August, 1907) the editor was nineteen years of age. In the following pages I give a collation of the printed text with the original MS, and also suggest some emendations which appear to me to be necessary:

P. 381, ll. 8-9, Dicuili . . . . *Astronomia, this title is not in the MS*; l. 17, decennovennalibus *MS*; p. 382, l. 12, decennovennali *MS*; l. 17, *for saltu the MS corrects bissexto in the margin*; ll. 26-27, Libellus . . . . I, *title not in MS*; l. 29, Per ludum *MS*; l. 32, numquam *MS*; p. 383, l. 3, fiant *MS*; l. 4, primae quę *MS*; l. 8, quę *MS*; l. 20, quotcumque *MS*; p. 384, l. 20, sublati *MS*; l. 23, manifeste *MS*; p. 385, l. 7, uel cum *MS*; l. 13, *for at MS has ac*; l. 17, numquam *MS*; l. 36 *for diurnum MS has diuinum*; l. 37, *read mensium, and for last word aut MS has uel*; p. 386, l. 1, concluditur et quoniam *MS*; l. 4, *for summa MS has sancta*; l. 15, *for iniamus MS has uiuamus*; l. 23, superfuerant *MS*; l. 27, prænuntiatas *MS*; l. 35, *read subtractos*; l. 36, superfuerint *and superesse MS*; l. 37, superfuerit *MS*; l. 38, *for tali MS has uel alio*; l. 39, peruenire *MS*; p. 387, l. 19, supersunt *MS*; l. 24, superesse *MS*; l. 37, *remove commas after Martii and Septembri*; l. 39, *remove commas after Martii and Novembri*; p. 388, l. 28, falletue *MS*; l. 38, sepe *MS*;<sup>1</sup> p. 389, l. 3, *for et MS has uel*; l. 7, super *MS*; l. 24, multitudinem *MS*; l. 40, post consumptum primum *MS*; p. 390, l. 8, per dictos *MS*; l. 9, *remove stop after videtur*; l. 14, *remove stop after annos*; l. 15, peregi *MS*; l. 19, *for iulea MS has uilia*; p. 391, l. 13, *in col. 10 MS has XXVI*;<sup>2</sup> l. 19, col. 4, *MS has XV and in col. 11 it has ii*; l. 25, col. 1, *remove Emb.*; p. 392, l. 13, col. 11 *above xxx insert Emb., and in col. 12 MS has xxviii*; l. 22, col. 12, *MS reads viiii*; p. 393, l. 4, *remove stop after bina*; l. 29, *for L read uel*; p. 395, l. 10, *this line should read as in MS Lucida per longos miscentes famina ciclos*; l. 30, quocumque *MS*; p. 396, l. 1, *remove stop after canto*; l. 9, *for spondet is MS reads spondeis*; l. 13, prorsus *MS*; l. 19, *for summus read summis*; l. 24, *for Tu read In*; l. 28, *for qui MS has quoniam*; l. 39, *for ne of MS we should emend nec*; l. 40, Franci *MS*; l. 41, *read Augusto*; p. 397, l. 22, *read Metaplasmos*; l. 27,

<sup>1</sup> In lines 15 and 19 read uniuscuiusque.

<sup>2</sup> On p. 391, l. 2, read tyrannica.



for Nam read with MS Non; l. 28, for vera read with MS iura; p. 398, ll. 1-2, Libellus . . . I, no title in MS; l. 10, Leuuarum MS; l. 17, leuuarum MS; l. 19, leuuae MS; l. 20, leuuas MS; l. 21, consumunt MS; l. 23, we should perhaps emend to per milia; l. 27, leuuis MS; l. 35, suptili MS; p. 399, l. 1, read praememoratis; l. 8, numerant MS; l. 11, read si milia,<sup>1</sup> l. 12, leuuas MS; l. 13, leuuae MS; l. 32, leuuae MS; l. 38, at the end of this line in the right-hand margin of the MS (f. 79b) is a "signe de renvoi" indicating that two verses written in the lower margin of the MS are to be inserted:

Cum solem adfirmant alii lunamque habitare  
In firmamento summo inter sidera fixa.

P. 400, l. 1, this line is defective; ll. 3, 4, these lines to be inserted after p. 399, l. 38, as indicated; l. 5, not in MS; l. 11, multiplica MS; l. 15, after illum a word is effaced; l. 24, dierumque MS; l. 26, for esse MS reads est; l. 27, constat MS; l. 29, for quem MS reads quoniam; l. 32, for regalis erit MS reads regulariter; l. 37, for dominus MS reads deus; p. 401, l. 27, quolibet MS; l. 32, read priori; p. 402, l. 3, spectaveris MS; l. 19, unoquoque MS; l. 36, finiatur MS; p. 403, l. 8, for Ibic read with MS Hic; l. 19, after subtrahere add memento; l. 37, tantundem MS; p. 404, l. 2, antecedente MS; l. 14, tamen MS; l. 17, embolismi MS; l. 28, after secundo insert in alio;<sup>2</sup> p. 405, l. 1, for cicli read with MS diei; l. 8, for fallerit read with MS fefellerit; l. 14, for videris read volueris; l. 20, for sic read with MS sicut; l. 32, rithmus MS; p. 406, l. 13, for primumque tenet we should perhaps emend primum retinet; l. 27, mundus MS; p. 407, l. 5, saltus MS; l. 10, orti MS; l. 16, nouies MS; p. 408, l. 5, perhaps we should read semper per pasca; l. 11, Illos cum MS; l. 18, octos is clearly wrong; l. 19, for est et the MS has esset; l. 21, quis MS; l. 28, insert comma after rector, and remove comma after multorum; l. 29, for Si MS reads Sis; l. 38, for binae read bina; p. 409, ll. 3-5, these three verses are written in the lower margin of the MS with a "signe de renvoi" for their insertion after p. 409, l. 2; p. 410, l. 5, tardantis MS; p. 410, l. 8, tardantis MS; p. 413, l. 6, read Rustica ne; l. 24, for parabis read with MS porro bis;<sup>3</sup> l. 28,

<sup>1</sup> On p. 399, l. 10, read semita.

<sup>2</sup> In this line numque seems wrong.

<sup>3</sup> On p. 413, l. 26, for Si per emend Semper, and on p. 416, l. 17, read continenter.

after this verse insert the line *Postremos scripti qui non sunt sed numerati*; l. 30, remove stop after *valerent*; p. 414, l. 2, for *et MS* reads *uel*; l. 12, *nimpe MS*; l. 23, *Sis MS*; l. 26, *promisum MS*; l. 35, *pirgis MS*; l. 38, after *volo* place a full stop; p. 415, ll. 1-2, title not in *MS*; l. 3, *nimpe MS*; l. 7, read *errantum*; l. 32, heading not in *MS*; l. 33, for *haud* read *quem*, and note that ll. 33 and 34 are to be written as two hexameters; p. 416, l. 9, read *inaequalem*; l. 19, under *die* in the *MS* are three dots meaning that the word is to be omitted; l. 19, read *in sequenti*; l. 32, omit comma after *custodientes*; p. 417, l. 1, title not in *MS*; l. 11, for *diem duorum* the *MS* has *uel duos*; l. 12, *transilias MS*; l. 17, *unoquoque MS*; l. 29, for *Quin MS* reads *Quoniam*; l. 37, for *ast* read *ac*; p. 418, l. 2, *reperietur MS*; l. 3, *iii* is not in *MS*; l. 5, *primo MS*; l. 8, insert comma after *sumet*; l. 11, *scribendum MS*; l. 23, for *Plene his ex bis* read *Plene ex his*; p. 419, l. 5, col. 9, for *ast* read *et*; l. 13, col. 2, *MS* reads *Id.* and so down the column; l. 20, col. 10, insert *i*; l. 24, col. 10, insert *i*; l. 28, col. 10, insert *i*; p. 420, l. 2, read *unoquoque*; l. 20, *tantundem MS*; l. 22, *bissextum MS*; l. 26, *occurrere MS*; l. 37, *iii MS*; l. 38, for *numeri MS* reads *nostri*; l. 39, for *certa* read *certe*; l. 39, for *Quin* read *Quoniam*; l. 41, *cicli MS*; l. 41, comma after *decennovenali*; p. 421, l. 1, comma after *undecimo*; l. 2, comma after *duodecimo*; l. 11, *viii MS*; l. 20, *exordio MS*; l. 34, for *et MS* has *uel*, and for *Quin* it has *Quoniam*; l. 36, for *diem MS* has *diei*; p. 422, l. 18, for *et MS* has *uel*;<sup>1</sup> l. 22, *possederit MS*; l. 33, *Quoniam MS*; p. 423, l. 11, *inuicem MS*; l. 15, for *quae MS* has *duae*; l. 16, for *quae MS* has *duae*; l. 17, for *at* read *ac*; l. 22, after *endecadis* the *MS* inserts *anni*; p. 424, l. 9, for *aut MS* reads *uel*; l. 12, for *doni suis exiguis* the *MS* reads *Dionisius Exiguus*; l. 15, for *ast* read *ac*; l. 19, *eaedem MS*; l. 21, *nimpe MS*; l. 22, *manserint MS*; l. 23, for *ast* read *ac*; l. 27, for *ast* read *ac*; p. 425, l. 12, read *consummatis*; l. 22, after *die MS* inserts *sancto*; p. 426, l. 2, *transilias MS*; l. 4, read *consummatis*; l. 5, *inter MS*; l. 18, for *ast* read *at*; l. 25, read *transilias*; l. 41, *pascales MS*; p. 427, l. 12, remove stop after *manifestat*; l. 24, in the column of figures under *iii* insert *i*; l. 28, remove comma after *ratione*; p. 428, l. 7, *decennovennali MS*; l. 33, read *additis*; p. 429, l. 32, *viii MS*; l. 33, read *uniuscuiusque*; p. 431, l. 31, heading not in

<sup>1</sup> On p. 422, l. 11, read *anastasseos*.

*MS*; l. 34, *read* hoc est; p. 432, l. 5, tantundem *MS*; l. 6, *after* incarnationis *MS adds* Domini;<sup>1</sup> l. 16, Moysaicum *MS*; l. 18, *read* imperium; l. 19, uigesimi *MS*; l. 21, terram *MS*; l. 30, *place a full stop after* incipiebant; l. 30, Propterea *MS*; l. 31, *after* sabbati *the MS inserts* que ante dominicam resurrectionem diei sabbati; l. 38, *for* dominus *MS reads* deus; p. 433, ll. 1–2, *heading not in MS*; l. 8, *for* de sidere *MS reads* desiderio; l. 15, tacent *MS*; l. 17, *read* incipimus; l. 30, Sin *MS*; p. 434, l. 2, *read* lxxiiæ and *remove* ac; l. 6, *remove stop after* bissexti; l. 6, illas *MS*; l. 11, incrementum *MS*; l. 14, *remove comma after* habeantur; l. 15, *read* unusquisque; l. 23, *read* unumquodque; l. 32, integro *MS*; p. 435, l. 9, *remove* et; l. 10, *for* quam *read* que;<sup>2</sup> l. 15, *read* DCCCCLX; l. 23, *read* sexagesima; l. 24, *for* die *read* dies; l. 25, DCCCC orum LX *MS*; l. 27, *for* et *read* uel; l. 32, *read* adsissa; l. 33, *not in MS*; l. 36, *for* quin *MS has* quoniam; p. 436, l. 11, *for* luminis *read* lunis; l. 12, illas *MS*; l. 13, *remove comma after* pluraliter and *insert* Et *before* ab; l. 15, *for* xxx *read* vi; p. 437, l. 1, *heading not in MS*; l. 7, *for* Quod *read* Quot; l. 12, *read* deesse; l. 15, *remove comma after* centum; l. 30, *heading not in MS*; l. 36, *for* quæ *read* qui; l. 37, *read* expulimus; p. 438, l. 8, *read* CC tis; l. 10, *for* L *read* C; l. 12, Tantundem *MS*; l. 22, *for* lunaris *read with MS* lunas; l. 24, *read* plus quam; l. 25, *read* uniuscuiusque; l. 30, *for* et *MS has* uel; l. 31, *place comma after* fiant; p. 439, l. 1, *remove comma after* dies; l. 18, *after* sol *MS inserts* in; l. 27, *heading not in MS*; l. 35, *for* lunare *read* luna; p. 440, l. 2, *for* xvii *read with MS* xxii; l. 3, *remove comma after* diebus; l. 5, *remove comma after* diebus; l. 19, *under second dixi there are four dots in the MS indicating that it is to be omitted*; l. 21, xxviii *MS*; l. 22, *under second numeri six dots for omission*; l. 28, *read* tardam; l. 30, rursum *MS*; p. 441, l. 1, *heading omitted in MS*; l. 10 *for* ast *read* et; l. 11, *for* et *read* ac; l. 12, lxxiii *MS*; l. 34, *for* at *read* ac; l. 36, *read* cessante; l. 37, *after* transmigrent *place a comma*; p. 442, l. 3, incessabile *MS*; l. 4, *heading not in MS*; l. 9, omit te; l. 23, *read* bisse *with MS*; l. 23, *place comma after* horæ; l. 24, *comma after* transcurrat; l. 26, *comma after* peragrat; l. 30, *read* bisse; l. 34, zoziasco *MS*; l. 39,

<sup>1</sup> On p. 432, l. 9, *read* calculationis.

<sup>2</sup> On p. 435, l. 13, *read* uniuscuiusque.

xliiii *MS*; p. 443, l. 8, xiii *MS*; l. 16, *comma after ostento*; l. 16, *for At and ast read ac*; l. 23, *zodiacum MS*; l. 25, *read xxvii*; l. 26, *read CXL*; p. 444, l. 1, *under dum in MS are three dots for omission*; l. 26, *Perfecte MS*; l. 27, *this line requires emendation*; l. 39, *remove comma after octo*; p. 445, l. 7, *for semper read with MS both times sepe*; l. 12, *for Non perhaps Nam*; l. 21, *for paria read pariter*; l. 25, *this line should perhaps be thus emended: Promissis multis iam sero pauca relatu*.<sup>1</sup>

We may conclude with some remarks on the Latinity of the *Computus*:

For *Aprilis* Dicuil (or the scribe) writes everywhere *Aprelis*, a form which is not registered in any of the standard lexicons (*Thesaurus Linguae Latinae*, Lipsiae, 1900–1915; Georges, *Ausf. Lat.-Deutsches Handwörterbuch*, 8<sup>e</sup> Aufl., 4 vols., Leipzig, 1912–19); the form *bisse* (p. 442) for *besse* is given in the *Thesaurus* (s.v. *bes*), and *leuua* (pp. 398, 399) for *leuga*, *leuca*, occurs in Beda and elsewhere (cf. Du Cange, ed. Henschel, s.v. *leuca*). Referring to the tides Dicuil (p. 435) uses the terms *reuma*, *adsissa*, and *recessa*. For *reuma* see Du Cange (s.v. *rheuma*) and Columbani *Ep.* v, ed. Gundlach, *Epistolae*, III (1892), p. 174; *Vita Condedi* ii, ed. Levison, *Script. Rer. Merov.*, V (1910), p. 651; *Vita Vulframni* viii, *ibid.*, p. 667; Beda *De Temporum Ratione* xxix, *PL*, XC, 423. For *adsissa* (*assisa*) see Isidore *De ordine creaturarum* ix. 5, 7, *PL*, LXXXIII, 936, 937; the word occurs as a gloss on *dodrans* in a Latin poem published by Thurneysen (*Revue Celtique*, XI (1890), p. 89). *Recessa* is employed by Isidore, *op. cit.*, ix. 7, *assisa sit recessa*.

The following words are not given by Georges: *ludificus* (pp. 381, 382, 397, 414); *ordinaliter* (383, 418, 426); *oda* (393, 396); *praememorare* (408, 417, 427); *endecas* (416, 423); *iterate* (417, 423); *solanus* (417, 427, 428, 431); *decennovalis* (420, 421); *incarnatio* (422, 432); *inconfuse* (423); *titulate* (431); *ostentum* (434, 435, 439); *quadrantilis* (435, 439).

The following are examples of late and technical words: *alternatim*, *anastassis*, *anchora* (*canonica*), *binarius*, *bissextilis*, *bissexтус*, *calculatio*, *ciclus*, *circumlustrare*, *codiculus*, *compotus*, *congregatim*,

<sup>1</sup> On p. 390, l. 23, *for crescesque read gregesque*; p. 441, l. 21, *chias seems wrong*.

congrue, connumerare, continuatim, contrarietas, conversim, creatio, decennovennalis, diphthongus, elongare, embolismus, epacta, evangelicus, famen, fulgescere, horoscopus, immobiliter, immutabiliter, incessabilis, indictio, insensatus, metaplasma, momentum, ogdoas, parasceue, pascha, paschalis, pirus, punctus, quadragesima, quadrivium, recapitulatio, regulare, rotalis, rotella, rotula, saltus (lunaris), septempler, sparsim, specialiter, spiritalis, subsequenter, subulcus, tonus, transcensus, trigeni, unarius, veraciter, versificus.

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